

November 6, 2002

File 15:ABI/Inform(R) 1971-2002/Nov 06
(c) 2002 ProQuest Info&Learning
File 98:General Sci Abs/Full-Text 1984-2002/Sep
(c) 2002 The HW Wilson Co.
File 674:Computer News Fulltext 1989-2002/Oct W4
(c) 2002 IDG Communications
File 9:Business & Industry(R) Jul/1994-2002/Nov 05
(c) 2002 Resp. DB Svcs.
File 370:Science 1996-1999/Jul W3
(c) 1999 AAAS
File 369:New Scientist 1994-2002/Oct W1
(c) 2002 Reed Business Information Ltd.
File 810:Business Wire 1986-1999/Feb 28
(c) 1999 Business Wire
File 636:Gale Group Newsletter DB(TM) 1987-2002/Nov 06
(c) 2002 The Gale Group
File 484:Periodical Abs Plustext 1986-2002/Oct W4
(c) 2002 ProQuest
File 647:CMP Computer Fulltext 1988-2002/Oct W2
(c) 2002 CMP Media, LLC
File 20:Dialog Global Reporter 1997-2002/Nov 06
(c) 2002 The Dialog Corp.
File 696:DIALOG Telecom. Newsletters 1995-2002/Nov 05
(c) 2002 The Dialog Corp.
File 634:San Jose Mercury Jun 1985-2002/Nov 05
(c) 2002 San Jose Mercury News
File 553:Wilson Bus. Abs. FullText 1982-2002/Sep
(c) 2002 The HW Wilson Co
File 635:Business Dateline(R) 1985-2002/Nov 06
(c) 2002 ProQuest Info&Learning

| Set | Items | Description |
|-----|----------|--|
| S1 | 230 | PHASE(2N)CONJUGAT? |
| S2 | 13019122 | PROBE? OR PROBING OR INTERROGAT? OR EXPLOR? OR INVESTIGAT? OR INSPECT? OR PENETRAT? OR PROD? |
| S3 | 380220 | BEAM? OR LASER? OR LIGHT(2N) (PULS? OR MODULAT?) OR MASER? - OR QUANTUM(2N)ELECTRONIC? OR OPTICAL(2N) (PUMP? OR GENERAT? OR MODULAT? OR OSCILLATOR?) OR IRASER? OR QUANTUM()GENERATOR? |
| S4 | 255 | INTRACAVIT? OR INTRA()CAVIT? |
| S5 | 23544 | S2(3N)S3 |
| S6 | 10 | S5(S)S1 |
| S7 | 10 | RD (unique items) |
| S8 | 0 | S1(S)S2(S)S3(S)S4 |

November 6, 2002

7/3,K/1 (Item 1 from file: 370)
DIALOG(R)File 370:Science
(c) 1999 AAAS. All rts. reserv.

00501559 (USE 9 FOR FULLTEXT)
**Spontaneous Oscillation and Self-Pumped Phase Conjugation in a
Photorefractive Polymer Optical Amplifier**
Grunnet-Jepsen, A.; Thompson, C. L.; Moerner, W. E.;
Department of Chemistry and Biochemistry, University of California, San
Diego, CA 92093-0340, USA.
Science Vol. 277 5325 pp. 549
Publication Date: 7-25-1997 (970725) Publication Year: 1997
Document Type: Journal ISSN: 0036-8075
Language: English
Section Heading: Reports
Word Count: 2588

(THIS IS THE FULLTEXT)

...Text: resulting in spontaneous oscillation (B13) . The configuration
may also be regarded as a self-pumped **phase - conjugate** mirror as
described below...

...now show that the same multilayer approach can be adopted to increase
the (Gamma) L **product** during two- **beam** coupling in a PR material. For
this case, the theoretical analysis is even simpler. Two...A " **phase -
conjugate** " beam, I.inf(4) (Fig. 4, solid line), appears counterpropagating
to the incoming pump (Fig...

...the same time. The physics responsible for the appearance of this beam
requires explanation. Optical **phase - conjugation** has fascinated
scientists for almost 50 years (B18) . Popularly referred to as "time
reversal," a **phase - conjugate** (PC) replica of an optical beam will
propagate through space with the complex **conjugate phase** of the
original beam, which may be viewed as propagation backward in time. Thus,
the **Phase conjugation** is produced when two counterpropagating pump beams
intersect in a nonlinear material; a third beam incident will generate its
PC replica. The early demonstrations of **phase conjugation** used a
time-consuming process of holographic recording, development, and reading
with carefully aligned counterpropagating plane reference waves.
Subsequently, dynamic (real-time) **phase conjugation** was demonstrated
with stimulated Brillouin scattering (B21) and four-wave mixing in a
nonlinear optical material (B22) . A major advance was the development of
the self-pumped **phase conjugator** (SPPC) (B23) , which required a PR
material. This device does not require a pair of...

...increases rapidly until it reaches a threshold value for the onset of
cavity oscillation and **phase conjugation** . Above the threshold, the
two-beam coupling gain exceeds the total optical losses of about...
mW/cm.sup(2) ((triangle-solid)) and 90 mW/cm.sup(2) ((open-circle)). No
phase conjugation was observed below the threshold of ~45 V/ (mu) m.
(Inset) Experimental arrangement for the...

7/3,K/2 (Item 1 from file: 636)
DIALOG(R)File 636:Gale Group Newsletter DB(TM)
(c) 2002 The Gale Group. All rts. reserv.

02999474 Supplier Number: 46117431 (USE FORMAT 7 FOR FULLTEXT)
OPTOELECTRONICS:Phase-Conjugate Mirror Removes Distortions
Optical Materials & Engineering News, v6, n6, pN/A
Feb 1, 1996
Language: English Record Type: Fulltext
Document Type: Newsletter; Trade
Word Count: 574

November 6, 2002

Phase - conjugate mirrors could be used to prevent the degradation of a laser beam amplified to higher power in multiple laser stages. Each stage can introduce aberrations into the beam. **Phase - conjugate** mirrors can help users obtain high-power laser beams of diffraction-limited quality. One proposed...

...laser system for an earth-observing satellite. This instrument will include compact, efficient, solid-state **lasers** that will **produce** pulses of 20-250 millijoules lasting 0.1-50.0 nanoseconds. Multistage power amplification, with...

...as high as 60% were achieved.

In the experiment, the cross-sectional area of a **phase - conjugate beam produced** by photorefractive four-wave mixing was compared with that of the return from a conventional mirror after passing through the aberrating medium. The **phase - conjugate** beam was returned with a cross-sectional area equal to that of the unaberrated beam...

7/3,K/3 (Item 2 from file: 636)

DIALOG(R)File 636:Gale Group Newsletter DB(TM)
(c) 2002 The Gale Group. All rts. reserv.

01075265 Supplier Number: 40675386 (USE FORMAT 7 FOR FULLTEXT)

The Naval Research Laboratory

SDI Monitor, v4, n3, pN/A

Feb 6, 1989

Language: English Record Type: Fulltext

Document Type: Magazine/Journal; Trade

Word Count: 114

(USE FORMAT 7 FOR FULLTEXT)

TEXT:

The Naval Research Laboratory wants to **investigate** Raman **beam** clean-up and **phase conjugation** .

7/3,K/4 (Item 3 from file: 636)

DIALOG(R)File 636:Gale Group Newsletter DB(TM)
(c) 2002 The Gale Group. All rts. reserv.

01071441 Supplier Number: 40661151 (USE FORMAT 7 FOR FULLTEXT)

NRL TO INVESTIGATE RAMAN BEAM CLEANUP

SDI Intelligence Report, v5, n3, pN/A

Jan 31, 1989

Language: English Record Type: Fulltext

Document Type: Magazine/Journal; Trade

Word Count: 126

(USE FORMAT 7 FOR FULLTEXT)

TEXT:

The Naval Research Laboratory (NRL) plans an **investigation** of Raman **beam** cleanup and **phase conjugation** . Tasks include the following:

7/3,K/5 (Item 4 from file: 636)

DIALOG(R)File 636:Gale Group Newsletter DB(TM)
(c) 2002 The Gale Group. All rts. reserv.

01070950 Supplier Number: 40660148 (USE FORMAT 7 FOR FULLTEXT)

Raman Beam Clean-Up.

Navy News & Undersea Technology, v6, n4, pN/A

Jan 30, 1989

Language: English Record Type: Fulltext

November 6, 2002

Document Type: Newsletter; Trade
Word Count: 96

(USE FORMAT 7 FOR FULLTEXT)

TEXT:

...Naval Research Laboratory needs a contractor to perform the following tasks in conjunction with the **investigation** of Raman **beam** clean-up and **phase conjugation** : characterize the operation of Karl Subscale Laser under injection locked conditions; operate the laser in conjunction with the Raman beam clean-up experiments; conduct experiments on Raman beam clean-up, **phase conjugation** to investigate wavefront preservation in Raman amplifier. Respond by Feb. 25. For information call Pat...

7/3,K/6 (Item 5 from file: 636)

DIALOG(R)File 636:Gale Group Newsletter DB(TM)
(c) 2002 The Gale Group. All rts. reserv.

01070937 Supplier Number: 40660112 (USE FORMAT 7 FOR FULLTEXT)

UNTITLED ARTICLE

Military Space, pN/A

Jan 30, 1989

Language: English Record Type: Fulltext

Document Type: Newsletter; Trade

Word Count: 75

(USE FORMAT 7 FOR FULLTEXT)

TEXT:

Naval Research Laboratory wants to **investigate** Raman **beam** clean-up and **phase conjugation** .

7/3,K/7 (Item 1 from file: 484)

DIALOG(R)File 484:Periodical Abs Plustext
(c) 2002 ProQuest. All rts. reserv.

02001315 (USE FORMAT 7 OR 9 FOR FULLTEXT)

Multiplex spectroscopy: Determining the transition moments and absolute concentrations of molecular species

Germann, Geoffrey J; Rakestraw, David J

Science (GSCI), v264 n5166, p1750-1753, p.4

Jun 17, 1994

ISSN: 0036-8075 JOURNAL CODE: GSCI

DOCUMENT TYPE: Feature

LANGUAGE: English

RECORD TYPE: Fulltext; Abstract

WORD COUNT: 2538

LENGTH: Long (31+ col inches)

TEXT:

... provide omega sub b , the backward pump beam in the DFWM process. The other IR **beam** , Op, the **probe beam** , is allowed to continue out of the sample cell and is directed into an IR...

...a function of wavelength This value provides the absorption spectrum in the experiment (7). The **phase conjugate** DFWM signal beam, omega sub s , is generated counter-propagating to omega sub p . The...function corrects for any decrease in the DFWM signal resulting from absorption of the pump, **probe** , and signal **beams** by the gas sample. The intensity of the beams is kept low to avoid optical...

7/3,K/8 (Item 2 from file: 484)

DIALOG(R)File 484:Periodical Abs Plustext
(c) 2002 ProQuest. All rts. reserv.

01841319 (USE FORMAT 7 OR 9 FOR FULLTEXT)

November 6, 2002

Researchers try to build time machines for microwaves

Glanz, James

Science (GSCI), v263 n5145, p321-322, p.2

Jan 21, 1994

ISSN: 0036-8075 JOURNAL CODE: GSCI

DOCUMENT TYPE: News

LANGUAGE: English RECORD TYPE: Fulltext; Abstract

WORD COUNT: 1724 LENGTH: Long (31+ col inches)

TEXT:

... planes, thereby "brightening" the targets seen by the radar system by orders of magnitude.

Microwave **phase conjugation** could also be a key to visionary schemes for collecting solar energy in space, then...

...microwave beams. To target the intense microwaves precisely, the ground station would send up a **probe beam**; the solar collector would respond with a vastly more powerful **phase - conjugated** beam. Without **phase conjugation**'s pinpoint accuracy, says physicist Norman Rostoker of the University of California, Irvine, who has...

7/3,K/9 (Item 3 from file: 484)

DIALOG(R)File 484:Periodical Abs Plustext

(c) 2002 ProQuest. All rts. reserv.

01470948 (USE FORMAT 7 OR 9 FOR FULLTEXT)

Boundary layer profiles in plasma chemical vapor deposition

Green, David S; Owano, Thomas G; Williams, Skip; Goodwin, David G; et al

Science (GSCI), v259 n5102, p1726-1729, p.4

Mar 19, 1993

ISSN: 0036-8075 JOURNAL CODE: GSCI

DOCUMENT TYPE: Feature

LANGUAGE: English RECORD TYPE: Fulltext; Abstract

WORD COUNT: 2522 LENGTH: Long (31+ col inches)

TEXT:

... Boltzmann distribution (10, 13).

The experimental setup for our DFWM experiment is known as the **phase conjugate** geometry (1, 2). The laser source is a conventional neodymium:yttrium-aluminum-garnet pumped dye...

...intensities in excess of saturation). Both the forward pump beam I sub f and the **probe beam** I sub p are vertically polarized, while the backward pump beam I sub b is...

...500 mum. The conjugate beam I sub c, the DFWM signal, is extracted from the **probe beam** path with a 1:1 beam splitter, passed through a linear polarizer and spatial filter...

7/3,K/10 (Item 4 from file: 484)

DIALOG(R)File 484:Periodical Abs Plustext

(c) 2002 ProQuest. All rts. reserv.

01171738 (USE FORMAT 7 OR 9 FOR FULLTEXT)

Detection of Trace Molecular Species Using Degenerate Four-Wave Mixing

Farrow, Roger L; Rakestraw, David J

Science (GSCI), v257 n5078, p1894-1900, p.7

Sep 25, 1992

ISSN: 0036-8075 JOURNAL CODE: GSCI

DOCUMENT TYPE: Feature

LANGUAGE: English RECORD TYPE: Fulltext; Abstract

WORD COUNT: 4692 LENGTH: Long (31+ col inches)

November 6, 2002

TEXT:

... intensity with a computer. At this point a beam splitter is used to produce the **probe** and forward pump **beams**, which are crossed at a small angle (typically 1 deg to 4 deg) and intersect in the medium to be studied. A second beam splitter placed in the **probe beam** path is used to extract the **phase conjugate** signal. The signal beam is directed to a convenient detection location often several meters away...

...1 where the NO concentrations were estimated to be ≈ 400 ppm (6). The pump and **probe laser beams** were unfocused but collimated, with beam diameters of ≈ 1 mm and relatively modest pulse energies...that are (most nearly) resonant with all three beams contribute effectively to the signal. the **phase - conjugate** geometry, only molecules with near-zero velocity along beam propagation direction simultaneously interact with the counterpropagat' pump **beams** and the **probe beam** for small angles of theta, giving rise to a sub-Doppler linewidth. Analytic expressions for the **phase - conjugate** line sh' have been derived in the limit of low laser intensity (7). We have...

...of the radiation, which is then directed into a uniform nonlinear medium used for optical **phase conjugation**. It was recently demonstrated by Ewart and co-workers (21) that, by using uniform laser...

...pump beams define a plane in the sample which is then intersected by a circular **probe beam** at an angle of 10 deg to 45 deg, creat' an elliptical intersection. In an...

...beam is oriented at 90 deg with respect to the forward pump b' and the **probe beam**. The generated signal beam will therefore be polarized' parallel to the backward pump, allowing efficient discrimination against th' scatter of the forward pump **beam** and **probe beam** with a polarizer.' ' An example of a single-shot image ...Initial experiments involved measurements of the sodiu' lines near 590 nm. Broadband visible light was **produced** with a "modeless" **laser** (28) with a full width at half maximum covering approximately 2 nm. T' experimental arrangement...

...long-recognize' property of DFWM, the sub-Doppler nature of the line shapes when the **phase - conjugate** geometry is used, can be used to significantly improve' spectral resolution and therefore assist in...Sandia National' Laboratories, Livermore, CA 94551.' ' REFERENCES AND NOTES' ' 1. R. A. Fisher, Ed., Optical **Phase Conjugation** (Academic Press, New York, ' 1983). ' ' 2. J. F. Reintjes, Nonlinear Optical Parametric Processes in Liquids...